

CS106.1 Project Documentation

Library Information System

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# Project Description

## Goals and Objectives

The Library Information System (LIS) project aims to create a system that creates a much more efficient and streamlined workflow in all in-house functions of a library, including member management, book transactions (borrowing and returning), and bookkeeping (replacement and addition of new books). The system enhances the efficiency of library employees and members, providing a catalogue and information to members to give an index to their borrowing decisions as well enhance User Experience. The system enables library staff to maintain an up-to-date record, ensuring that members have access to the latest information.

### Objectives

1. Design and develop a comprehensive system that manages all in-house functions of a library.
2. Perform basic library activities, such as member registration and management, book transactions, and bookkeeping.
3. Improve the efficiency of library employees and members.
4. Provide a catalogue and information to members to facilitate their borrowing decisions.
5. Allow library staff to maintain an up-to-date record to ensure members have access to the latest information.
6. Create a user friendly and enjoyable experience with good style, format and layout of functions, and rapid response of system.

### System Function

1. The system allows secure login for administrators and members.
2. The administrator can access and view books and members' information.
3. The administrator can add new books to the catalogue and modify existing records.
4. The administrator can add new members to the system and modify their personal information.
5. The system logs messages in a "due date" file whenever the due date for a loaned book is approaching.
6. The system logs messages in an "overdue" file whenever a book is returned past its due date.
7. Members can view the catalogue along with availability.
8. Members can pre-book books.
9. The system logs messages in a "return" file whenever a book is returned.
10. These features help the library to efficiently manage its resources and provide better service to its members.

## Timeline and Project Constraints

Due to the short timeline of only 2 days for the Library Information System (LIS) project, there are several potential areas where the lack of time for testing and iterative design could affect the quality, credibility, and reliability of the proposed ideas for addressing the project's problems and needs.

These concerns which may affect the project are…

1. Lack of thorough testing: there may not be enough time to thoroughly test the system, which could lead to issues that go unnoticed.
2. Incomplete or insufficient requirements: it may not be possible to fully identify and document all of the functional and non-functional requirements for the system, which could result in missing or incomplete features.
3. Limited opportunity for iterative design: it may be difficult to iterate on the design and make improvements based on feedback or testing. This could result in a less optimal user experience and user interface.
4. Inability to identify all potential design problems: it may be difficult to identify all potential design problems and areas for improvement, which could impact the quality of the final product.

To address these issues, it may be useful to focus on testing and refining the most critical requirements first. It can also help to seek feedback from users early in the process to identify potential issues and guide design decisions.

## Responsibilities

As the sole team member tasked with creating the Documentation for the Library Information System widget application, I am responsible for fulfilling the following roles:

1. Project Manager: Manage the project by defining its goals and objectives, creating a timeline, and assigning roles and responsibilities to team members.
2. Software Architect: Select the appropriate software process model(s) based on the project goals and constraints and explain the reasoning to the team.
3. Developer/Programmer: Select the right tools, technologies, IDEs, and programming languages that meet the project's requirements and constraints.
4. Quality Assurance (QA) Engineer: Create testing plans and protocols to ensure the software meets the requirements.
5. User Experience (UX) Designer: Design the UI/prototype for the software system, including sketches, wireframes, and hi-fi prototypes.
6. Requirement Analyst: Analyse and document the functional and non-functional requirements, organize and prioritize them, and obtain formal approval from the client or tutor.
7. User Researcher: Conduct user research by using techniques such as interviewing and ethnographic research to elicit requirements from clients and create user stories and scenarios.

## Software Process Model

In order to complete the Library Information System (LIS) project within the tight timeline of 2 days, I will be utilizing a combination of fast software process models, including Rapid Application Development (RAD), Kanban, and Agile methodologies. These process models are well-suited for fast-paced, iterative development and emphasize, flexibility, and continuous improvement.

These Software Process Models are…

1. Using RAD, an agile software development approach, is ideal for a short timeline project, as it focuses on rapid prototyping and iterative design to quickly produce a functional product.
2. Implementing Kanban, a project management method that uses visual cues to represent work items and their progress, will promote continuous delivery, reduce work in progress, and help to ensure the project is completed on time.\
3. The Agile Methodologies that I will be inheriting in the duration of the project is Scrum and Lean are popular agile methodologies. Scrum emphasizes collaboration, flexibility, and rapid iteration through breaking down the project into manageable tasks and working in sprints. This allows for continuous refinement and daily meetings ensure progress. Lean emphasizes continuous improvement and waste reduction by eliminating unnecessary processes to make development more efficient. It prioritizes delivering value to the customer.

## Tools

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| --- | --- |
| Word - It will be used for documentation of progress and analysis which will explain the decisions made during the project timeline. | Microsoft Word Logo, symbol, meaning, history, PNG, brand |
| ToDoist - It will be used as a task and project management tool to create, organize, prioritize, and track tasks and goals which is helpful for organizing project workflow and track progress. | todoist-logo |
| Draw.io – It is tool which creates diagrams such as use case diagrams and flowcharts, to help visualize the structure and architecture of the functionality of the Library Information System. |  |
| Figma – Is a prototyping software which allows to create low-fidelity (lo-fi) and high-fidelity (hi-fi) prototypes of the user interface for the widget application. This tool will help in creating a visual representation of the system design and gather feedback from potential users. | Product Interview: (Hypothetical) Figma is losing customers at 6–7% weekly.  Figure out the reason & prioritize solutions. | by Vinit Mahale | Bootcamp |
| QT Creator – Is an IDE which will be used to build the widget application for the Library Information System. This is an integrated development environment (IDE) that will provide a suite of tools to facilitate software development. | Download Qt Creator for Mac | MacUpdate |

# Software Requirements

## Requirements

Requirements

To ensure the success of the Library Information System project, it's important to identify and document the functional and non-functional requirements of the system. Functional requirements outline what the system should do, while non-functional requirements describe how the system should do it.

Functional Requirements:

* The system should allow secure login for administrators and members.
* The administrator should be able to access and view books and members' information.
* The administrator should be able to add new books to the catalogue and modify existing records.
* The administrator should be able to add new members to the system and modify their personal information.
* The system should log messages in a "due date" file whenever the due date for a loaned book is approaching.
* The system should log messages in an "overdue" file whenever a book is returned past its due date.
* Members should be able to view the catalogue along with availability.
* Members should be able to pre-book books.
* The system should log messages in a "return" file whenever a book is returned.

Non-Functional Requirements:

* The system should load quickly and respond to user inputs rapidly.
* The system should have an intuitive and easy-to-use interface with easy-to-follow navigation.
* The system should be accessible across different devices, including desktops, laptops, tablets, and mobile phones.
* The system should have robust security measures to protect user data and prevent unauthorized access.
* The system should be able to handle a large number of users without experiencing performance issues.
* The system should provide users with clear feedback and guidance when errors occur.
* The system should provide a visually pleasing and engaging experience for users.
* The system should be designed to be customizable and configurable, allowing users to adapt it to their needs.
* The system should provide a seamless and uninterrupted experience.

User Experience Requirements:

* The system should provide users with an easy and enjoyable experience when browsing, borrowing, and returning books.
* The system should provide a clear and consistent visual design throughout the application.
* The system should be designed with the user's perspective in mind, making it easy for them to navigate and find what they are looking for.
* The system should provide users with clear instructions and guidance when performing tasks, such as searching for books or making reservations.

## Requirements Research

## Classification and Organisation

## Prioritisation and Negotiation

## Requirements Specifications